



MAGAZINE

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FRONT COVER: "Swan Lake," by E. A. Newman (Wilton Works)

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The Story of the Zip

By Kathleen Harrington

The zip is one of the mechanics of its invention lies a fascinating experiment in which a fortune

Illustrations by courtesy of Talon Inc.

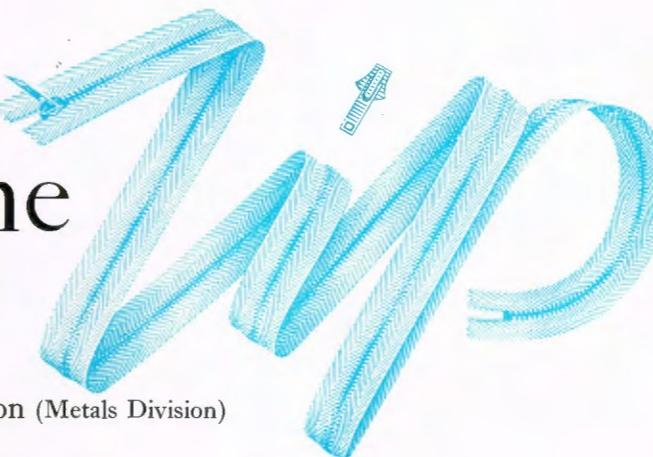
THE zip fastener is surely one of the most remarkable inventions of any age—remarkable not in the sense of being a breathtaking wonder of science like the telephone, the aeroplane or television, but in the sense that it does an everyday but essential job with extraordinary ingenuity.

The story of the zip is a long and fascinating one. It began as far back as the middle of the nineteenth century, when an American patented a design for a fastener consisting of two bead-edged tapes held together by sliding metal clasps. Known as the "Princess," this was never developed beyond the experimental stage, as it proved in practice clumsy and unreliable.

Only the most simple forms of fastening garments seemed to work—by tying, by buttoning, or by attaching hooks and eyes. The only advance on these methods was achieved in 1890, when a press button snap fastener made its appearance.

It was another American, Whitcomb L. Judson, who in 1891 was responsible for the next landmark in the story of the zip. An engineer of remarkable versatility, his interests ranged from hooks and eyes to street railways; it was to finance his experimental railways that he tried to interest people in his most recent invention, "a clasp locker and unlocker for shoes."

In theory this was very sound. A sliding cam was made to run over a series of hooks and eyes,



Harrington (Metals Division)

al wonders of the age. Behind story of 30 years' unrelenting was staked and almost lost.

It opened when least expected or remained so obstinately locked in position that it had to be cut from the garment.

The company, now restyled the Automatic Hook and Eye Company, was in a parlous state. Shareholders appeared and disappeared in rapid succession, and money was desperately short.

The C-Curity Fastener

Judson and Lipper having given up the struggle after the failure of the C-Curity fastener, Aronson's was the only mechanical talent remaining in the company. Knowing that he possessed neither the training nor experience needed to save the business, he set about finding an engineer who could make and develop both the product and the necessary machinery and who had sufficient tenacity to stick to his ideas and see them through. He heard through a friend of a young Swedish engineer called Gideon Sundback, then engaged in designing turbo-generators, who apparently had all the right qualities for the job.

Originally Sundback had no intention of leaving important and lucrative work to waste time on an unfamiliar and unsuccessful gadget. A year later, however, the prospect of different work had greater appeal.

Sundback met Aronson and was shown the fastener,



GIDEON SUNDBACK, inventor of the zip



ARONSON, PIONEER OF THE ZIP, with his daughter Ruth, about 1905. Ruth Aronson married Gideon Sundback.

which immediately fascinated him. He joined the Automatic Hook and Eye Company in 1906, and for the remainder of his life, until his death in June 1954, Dr. Sundback's name was associated with the zip fastener industry in many parts of the world. It is interesting to note that a year or so after joining the company he married Aronson's daughter.

Sundback's efforts were directed first towards improving existing types and designing a machine for stamping out and fixing the hooks and eyes. He achieved little success with his "Plako" model, marketed in 1908, but at his second attempt, in 1912, produced a fastener on an entirely new principle which so impressed Colonel Walker that he founded forthwith the Hookless Fastener Company, into which he plunged heart and soul.

Once again his enthusiasm proved premature, for the Hookless No. 1 fastener was shown in use to have an effective life of about three weeks.

Sundback was undaunted. He knew now the principles essential to success and the weaknesses revealed by all the previous models. Writing at the time, he envisaged:

. . . an idea in which we fastened to the edge of the tape a series of tiny cups. These were made just as if you took a round soup spoon, split the handle lengthwise, almost down to the bowl, and fastened the tape in this slit. If we place such spoons along the edge of the tape, spaced apart slightly more than the thickness of the metal of which they are made, we have a series of spoons and spoon-shaped spaces. The series of spoons on another identical piece of tape can be inserted one at a time into the spoon-like spaces, until the tapes have been progressively locked together along their entire length. If the end spoons of the series are held in place, the entire series is secure, because no one spoon can be pulled out in a straight line from the space between the adjacent spoons.

This fastener was in fact made, but Sundback found that the shape of the spoon caused the fastener to pop open, and he had to use an elongated cup instead of a round one. With this last alteration the modern fastener came into being—officially as the Hookless No. 2 fastener, patented in 1913 and sold for the first time in 1914.

It would be pleasant to record that an eager public flocked to buy it and that in a short time Sundback and Walker were reaping the reward of fifty years' efforts. In fact, another uphill struggle lay before them.

Not surprisingly, buyers were suspicious of what, to them, was just another "gimmick." Clothing manufacturers refused to have anything to do with it, and the company's two salesmen, sons of Colonel Walker, had to rely on chance sales to retailers and consumers. In 1917 the picture changed dramatically. America had

entered the war, and an enterprising tailor conceived the idea of fitting zip fasteners to sailors' money belts. His order for 10,000 fasteners a week seemed like an avalanche, particularly when it was followed by orders for U.S. Navy flying suits. By the time the war ended, clothing manufacturers and other big potential users had begun to take an interest, and zips were soon appearing in many new applications—on gloves, for instance, and tobacco pouches and overshoes. By 1926 they were applied to as many as 169 different articles.

Besides being a mechanical genius, Gideon Sundback was a very shrewd businessman. His contract of employment provided that any American rights granted on his invention should belong to the company but that over the rest of the world he was free to exploit his patents for his own benefit.

So in 1917 he asked a friend who happened to be visiting Europe to try to find a buyer for his extra-American rights. By sheer chance a piece of fastener fell into the hands of Mr. Hyam Marks, then a director of Kynoch Ltd., who were on the look-out for new spheres of peacetime activity. Kynochs recognised the possibilities of the invention and bought Sundback's rights at once. Six years later a further agreement gave Kynochs the benefit of all Sundback's present and future inventions in return for a holding in a new company, Lightning Fasteners Ltd.

For the first few years little success was achieved in the British market, and it was not until the Wembley Exhibition of 1925 that real interest was aroused. In the first year of its existence the L.F. factory at Witton produced one mile of fastener. Some idea of the progress made since then may be gauged by the fact that in 1953 Lightning Fasteners Ltd.,



New zip possibilities, as seen in America

together with its various overseas subsidiaries, produced nearly 25,000 miles.

The story of the zip would be incomplete without two footnotes. To tidy up the American chapters, it should be recorded that Colonel Walker's original company is today the great organisation of Talon Inc., at Meadville, Pennsylvania, which has a payroll of 3600 and produces more than a million feet of fastener a day.

And lastly, that word "zip." History reveals several claimants for the honour of inventing it, including Mr. R. Finch, who was for many years associated with the development of Lightning Fasteners Ltd. Perhaps the most imaginative explanation relates that it was coined by a famous English novelist when, as a publicity stunt, he fastened and unfastened the dress of an equally famous actress; on a much less romantic level, our American colleagues tell us that in 1926 the Goodrich Co. adopted "zipper" as a trade name for galoshes fitted with slide fasteners.



ADVERTISEMENT CARD for the forerunner of the zip. Printed in Paris about 1911.



'TERYLENE' LECTURER

I ENTERED the blouse department of the big Northampton store and an assistant came forward. "A 'Terylene' blouse? Certainly, sir," she said. "What are your wife's measurements? Well, now, here is a very nice white blouse in that size."

"White?" I said dubiously. "I'm not sure she'd like that. Shows the dirt, you know; and stains would be so difficult to get out."

"'Terylene' is practically unstainable," she said. "You could spill blackcurrant juice on that blouse, rinse it out, and have it clean, dry and as good as new in thirty minutes."

"Wouldn't those pleats be rather difficult to iron?"

"The pleats are not removed by washing, sir, and the blouse will seldom need ironing, because 'Terylene' is virtually uncrushable."

I put up a last defence. "But will it wear well?"

"Treated correctly it will last for much longer than anything else you could buy. It is resistant to moths, mildew, sunlight and acids, it's non-inflammable——"

"I'll buy it," I said.

In playing the part of a customer anxious to get value for money but still a little hazy as to the merits of 'Terylene' I had been cheating a little. That morning I had heard Miss Zita Paddon, the 'Terylene' Council's chief lecturer, talk to the assistants of this store about 'Terylene,' arming them with the very information I had asked for and a great deal more. Had they been listening, I wondered, and did they remember what she told them? Apparently they did.

Zita Paddon has now given well over 200 lectures on 'Terylene,' which have been heard by more than 8000 people. Most of the listeners have been retail assistants, buyers, under-buyers and departmental managers. As more and more 'Terylene' comes into the shops, they are selling more and more. It sells easily, but it must be sold *right*, and it is in the interests of both the stores and I.C.I. that it should be.

Another type of listener figures in Zita Paddon's programme of lectures under the heading "miscellaneous." Bodies which take a disinterested but highly flattering interest in 'Terylene' include women's institutes, towns-women's guilds, community centres, ladies' circles, chambers of commerce, teachers' colleges, technical colleges, and business and professional women's clubs.

The lectures, however, are aimed chiefly at informing the staffs of retail stores, forestalling the questions that customers will inevitably ask about 'Terylene.' Zita visits the store by appointment, arriving about 8.30 a.m. to prepare for the first lecture at 9 o'clock. The first step is to unpack a suitcase full of "props": 'Terylene' garments in every shape and form, samples in various weaves and textures, and, on the principle that seeing is believing, a bottle of blackcurrant juice and a bottle of acid. A tiny pleated 'Terylene' skirt that has held its pleats after a year's immersion in water must be unpacked from its damp spongebag and re-immersed in a basin of water. Another basin of water must be provided to rinse out the blouse that is to be spotted with blackcurrant juice. A box of matches must be at hand for the inflammability test.

When the stage is set the buyers and counter assistants file in. The lecture will last probably for an hour; then there are questions. Why are 'Terylene' stockings not made? Should 'Terylene' be dry-cleaned? Will it become any cheaper?

There is just time to rearrange the "props" before a second lecture begins for another batch of buyers and assistants. After that she walks round the store and talks to individual members of the staff, answering other questions, or visits smaller shops in the same town which do not rate a lecture to themselves.

Although Zita and an assistant have covered 200 retail stores in this way since 1953, they feel awed by the number they still have to visit. Moreover, since a store may lose 40-60% of its staff in a single year, each of those already visited should be revisited periodically.

To bring the same kind of information to the staffs of small outfitters and drapers, Zita has now started to give lectures in the evenings in the larger towns, inviting the senior staff of all the shops dealing in textiles and making up the number, if necessary, with teachers and students of technical colleges who are concerned with needle subjects. They are well attended, but she must keep a watchful eye on counter-attractions such as television and on the weather, both of which are capable of keeping the best-intentioned people at home.

Putting 'Terylene' on the map, Zita admits, is a process that is virtually endless. But it has its rewarding moments, as my experience in the Northampton store shows.

M.J.D.



Miss Zita Paddon

CENTRAL COUNCIL

Once again Central Council presented a picture of a family whose grievances were no more than the froth on a happy relationship. Discussion centred chiefly on the Profit Sharing Scheme and pension matters, and a number of interesting points were raised. Here is a brief report of the meeting.

With sketches by Ralph Sallon

THE theme of the Chairman's opening address at last month's meeting of Central Council at Scarborough was the remarkable progress made by the Company in the year 1954. The value of the Company's consolidated sales, said Dr. Fleck, had reached the record total of £352m. as against £282m. in 1953—a notable increase, he commented, even when it is remembered that the 1954 figures included £25m. in respect of new subsidiaries. Both in value and volume the Company's sales at home and abroad were records. Our exports were over £67m.—£9m. higher than the previous year. Much of the success, said Dr. Fleck, was due to the steady investment in new and improved plants undertaken by the Company since the end of the war.

The Chairman then referred to his press conference on the Annual Report two days before. "I would like to tell you," he said, "that I took the opportunity to explain once again . . . that the Board of I.C.I. is as resolute in its determination to oppose nationalisation today as it has ever been and that we intend to take all possible and proper steps to combat that idea should it ever come forward in a precise and specified form. We do this because we believe that the nationalisation of I.C.I., or any part of it, would be harmful to the employees, stockholders and customers alike."

The meeting went on to consider two motions concerning the Profit Sharing Scheme. The first—a composite motion from Dyestuffs and Leathercloth—asked that the scheme should not exclude employees under 21. "The young people are members of the I.C.I. family and should share alike in the benefits of the family" was how one

speaker put it. Moreover, it was argued by the mover of the motion, it was not fair that apprentices who started work at the age of 15 should have to wait until they were 24 before they drew their first profit-sharing benefits. An early entry into the scheme would encourage them to stay on.

This was a point of view opposed by Mr. Rhodes (Billingham Division). Apprentices learned at our expense, he argued. Some may not be suitable to stay with us, others would benefit from outside experience. Do not let us try to tie them to I.C.I. too early. However, the motion clearly had the sympathy of Central Council and, put to the vote, was carried with only four against.

Discussion then centred on the Wilton motion that in the event of discharge for misconduct, stock already in the hands of the trustees of the Profit Sharing Scheme for the credit of the employee should not be forfeited. Is it right, argued Mr. York (Wilton), that a man who has helped to produce the profits—perhaps over many years—and then makes one bad mistake should forfeit his share in the profits for those back years? This particular clause, said Mr. Goodsell (Wilton) was a black spot in the Profit Sharing Scheme. It could be that a man had twenty-four shares held in his name by the trustees, with one more share to go before he acquired his block of twenty-five. One mistake, and he would stand to lose the whole of four years' profit-sharing.

Here Mr. Hill, Head of Pensions and Assistance Funds Department, the department which administers the Profit Sharing Scheme, intervened to say that the operative words in the relevant rule were "shall be *liable*" to

forfeiture. There was no question of forfeiture being automatic. Any case would be considered in the light of the circumstances. Only in a case of really serious misconduct would forfeiture be applied.

Nevertheless this reply, humane and understanding as it was, did not seem to satisfy the meeting. Mr. Hutton (Billingham) went to the microphone to ask that the scheme should be made "as watertight as possible" to safeguard what had already been earned. The present clause—and he used the words with deliberation—was "harmful and heartless."

Other members of Council spoke in the same strain, Mr. Jackson (Wilton) talked of this "illogical" clause. Mr. Allardyce (Billingham) was emphatic that in the case of misconduct it was not a question of a man forfeiting a privilege but forfeiting a right—a right which he had earned by virtue of past loyalty and hard work.

These arguments again called for intervention by Mr. Hill. He rose to inform the meeting of an important point. The clause in question had been inserted for certain very good reasons, and he doubted whether the clause could be altered without jeopardising the whole scheme.

This new light on the matter clearly caused some people to have second thoughts, but put to the meeting the motion was carried by thirty-two votes, which meant that under standing orders it was referred back to Divisions for further consideration.

A Tricky Problem

Mr. R. A. Banks, the Personnel Director, then rose to report on the progress of the committee which had been working on what he described as "the tricky and intricate problem" of a revised share investment scheme. The taxation difficulties were considerable, he said. Moreover

new factors had come to light which had not made it easier to produce an improved scheme, and although the committee had not completed their deliberations, he was careful to give Council no false hope of a satisfactory outcome.

Council now embarked on a labyrinth of motions almost unintelligible to those not versed in the intricacies of Works Council, Division Council and Central Council procedure. All these resolutions arose out of the report of the committee enquiring into joint consultation—a committee whose recommendations first came before Central Council twelve months ago. Consideration at Divisional level had led to a variety of suggestions. It was an opportunity for the secretary of Central Council, Mr. Alfred Inglis, to show his paces. He played a masterly hand. Some motions were withdrawn and others were proposed; finally, by an ingenious compromise, a composite motion was agreed to by all amid satisfaction all round. Only once, in fact, did the maestro seem to falter as, like a conjurer, he made one motion disappear and another take its place.

Choice of Two Watches

After this, Council were once again on familiar ground with an old—one might almost say perennial—friend in their midst: a resolution concerning long service awards. Mr. Inglis reported the Company's decision in this respect. There was to be a choice of two wrist watches for the 30 year award for men—a hexagonal one as at present, and a round case with a round face and gilt hands as an alternative. The choice would first operate in 1956.

There was an interesting problem to follow—the Company's reply to the request that facilities be allowed for the controlled purchase of I.C.I. products by employees. Mr. E. T. Grint, Chief Labour Officer, gave the official answer. It was to the effect that the financial benefits that employees might expect under such a scheme would be



Mr. T. McCall



Mr. T. Spowart

exceeded by the cost of administering it. A proposition to enable any I.C.I. product to be purchased by any I.C.I. employee on preferential terms could not be entertained by the Company. But the present policy of Divisions selling their standard products on a cash and carry basis to their own employees could be extended with certain safeguards. But, said Mr. Grint, he would be wrong if he

deluded the meeting into thinking that this small extension to existing practice would fulfil the hopes of those who moved the motion.

"This is a disappointment," said Mr. Hutton (Billingham Division) bluntly. "Take I.C.I. paints," said Mr. Ireland (General Chemicals Division).

"These paints come into all I.C.I. factories: could not



Mr. R. A. Banks

works order a larger quantity and then make some available to employees?"

This suggestion brought Mr. Williams, chairman of Paints Division, to the microphone. He said frankly that when the motion was first proposed, Paints Division had regarded it with some sympathy because they saw in it a possible means of increasing sales, but the more they went into it the more they found the disadvantages outweighed the benefits, and any scheme which was detrimental to the Company's interests was in turn, in the long run, detrimental to the interests of the employees as a whole.

The I.C.I. Scarf

And now for a lighter note. Amidst applause, Mr. Inglis draped the microphone in front of the Chairman with a sample of the new I.C.I. scarf. It was an all-'Terylene' scarf. A complimentary scarf would be sent to the proposer and seconder of the motion at Scarborough last year. "But that," said Mr. Inglis amidst laughter, "is not to be taken as a precedent."

After a luncheon, once again enlivened by an excellent speech from the Mayor of Scarborough, Council reassembled to listen to Mr. Armstrong, the Finance Director, explaining and expanding the 1954 accounts.

The figures he analysed were the following:

	1953	1954
	£m.	£m.
Gross manufacturing and trading proceeds and gross income from investments, etc. . . .	285·6	357·1
Raw materials for production and maintenance, purchases for resale, and all payments for external services, excluding all wages and salaries	169·7	207·7
Wages and salaries	62·8	77·0
Pensions and contributions to Pension Funds	4·5	5·4
Depreciation of plants	11·6	16·6
Employees' profit-sharing bonus..	—	2·7
United Kingdom and overseas taxation	17·2	21·2
Retained as reserves for employment in the business	12·5	16·8
Distributed as net dividends to stockholders	7·3	9·7
	£m.	£m.
	285·6	357·1

Among the many interesting points Mr. Armstrong had to make, he dealt with the figure of £2·7m. for the employees' profit-sharing bonus. He

stated that they expected some 900,000 shares would be in the hands of the trustees before the end of July. Of the £2·7m., about £750,000 was being paid out in tax, leaving just under £2m. to be distributed in bonus.

Mr. Armstrong then went on to say that if anyone wanted further explanations about the accounts he had only to go and ask the Chief Accountant at his



Mr. A. W. Inglis

works, who would provide the answers. "Fire your questions at him," were the Finance Director's parting words.

Council then turned to Pension Fund matters. There were three motions—two of them from Metals and one from Dyestuffs—all of which had this in common, that they requested larger payments out of the Fund. It was a trouble stemming from the fall in the value of money which has rendered the benefits of the earlier years so much smaller in terms of present-day purchasing power. And there was obviously widespread sympathy in Council for the hardship of these cases, even though it was not easy to see what could be done about them without asking the Company to put its hand still deeper into its pocket, and this many were clearly reluctant to do in view of so much generosity in recent years.

Pension Problems

Mr. Thomson (Metals Division) moved the first motion, regretting that under the present rules the benefits to the dependants of members who died within the first ten years of membership were less than under the old rules.

Mr. Hill of the Pensions Department intervened to remind the meeting that any alterations in the terms of the rules such as suggested would inevitably mean bigger payments, and this could not be considered until after the next actuarial valuation, which would be in 1956.

Mr. Morris (Metals Division) then took up the cudgels. He quoted a case of a man with 47 years' service getting only 12s. a week more pension than a man with ten years' service. This example drew a firm retort from Mr. Hill. He did not, said Mr. Hill, know the details of the actual case quoted, but the

average pension granted recently to persons with 40-odd years' service was in fact 43s. 3d. a week against the minimum of 15s. a week.

In the course of these discussions on the pensions question Mr. Rhodes (Billingham Division) intervened to make a very fair point. Was it not time, he said, to recon-

sider the whole basis of the Pension Fund? Had not the moment come for I.C.I. workers seriously to consider whether they would not be better advised to put more into the fund themselves in order to get more out of it? In order to get more out of it, Mr. Rhodes suggested amidst laughter that those who leave the Company of their own accord should leave their pension contributions behind to be given to those who stayed the course.

Lastly, Council turned to the question of canteens—a recurrent topic at many meetings.

Alkali Division proposed, and argued with some show of conviction, that each Division should be given a target subsidy and for freedom to regulate its price policy within that limit. Mr. Grint, Chief Labour Officer, reminded Council of a previous discussion on this matter and recalled some of the arguments which had then led Council to support the idea of uniform prices. Mr. Morris (Metals Division) capped it all and drew loud laughter with his remark: "Let us all pay the same, even if it is a bit lower!" The motion was defeated and was referred back to Division for further consideration.

Tribute to Dr. Fleck

Finally the meeting wound up with an elegant tribute by Mr. Shaw, manager of Castner-Kellner Works, to the Chairman, Dr. Fleck. He rose to congratulate the Chairman on receiving the highest honour that science can bestow, namely Fellowship of the Royal Society. "You, sir," he said in effect, "made your name in the realms of pure science and by your research have contributed to the coming of the atomic age; but today you stand among us distinguished as a leader of your fellow men."

And so after a few graceful words from Mr. McCall, chairman of the workers' representatives for the fifth time, the meeting came to a close, leaving a feeling that if all these are the worst of the grievances that we in I.C.I. have to endure, then indeed we are a happy and united family.

R.M.K.



Mr. G. Winspear



Mr. T. Wallace



Garden Notes

By Philip Harvey

Illustrated by Ronald Ingles

ARE we going to get another cool, sunless summer? Last year many gardeners were caught unawares when their roses succumbed to black spot, nearly always a menace in damp weather unless preventive measures are taken. In my own garden black spot did not appear until late August; but I was apparently luckier than many, as where spraying had been overlooked the disease appeared some weeks earlier.

Much nonsense has been written about black spot, and indeed other rose diseases. Some writers maintain that if roses are grown naturally there should be no disease. In the first place, the term "natural" is meaningless in this context. Modern rose varieties are in themselves unnatural, and if we get down to fundamentals, so is all gardening. It is, of course, true that a vigorous, well-grown plant has a better chance of resisting disease attack, but vigour as such will not guarantee immunity. If your garden is in a built-up, industrialised area or the suburbs of a large town, black spot is less likely to appear than in the country. The precise reason is not clear, though it is thought that the soot and smoke discourage the development of the fungus spores. Heavy morning dews and high humidity favour infection.

Do not confuse black spot with other leaf spots totally unconnected with this trouble. You can easily distinguish black spot by the fringed edge. Other leaf markings are

usually due to sudden temperature and weather changes.

Foliage infected with black spot eventually falls to the ground. Though diseased leaves persist longer on certain varieties, the fungus dies once the leaves disintegrate. It may, however, remain on the stems until the following spring.

Mulching with damp peat, lawn mowings, etc., is claimed to keep down the disease. My own experience does not confirm this. There is, however, no denying that a 2 in. deep mulch does help to keep the roots cool in hot weather.

Ido not know any rose which is immune from black spot, but some varieties are decidedly resistant. Even so, in a really wet summer very few varieties will escape completely. If you were troubled last year with black spot and June or July 1955 show signs of being really wet months, take preventive measures. You can arrest the spread of the disease, but it is far simpler to anticipate matters and spray beforehand so that the fungus spores do not germinate at all.

Spraying at ten-day intervals with 'Tulisan' is an excellent deterrent. If you are able to get the spray on the trees just before rain threatens, so much the better. By mixing with 'Sybol' it is possible to tackle diseases and pests in one operation.

Mildew is more widespread than black spot. It is particularly troublesome in a dry season. The white powdery covering on leaves, flower buds and young shoots is

unmistakable. Sudden temperature changes, also draughty positions against walls and hedges, encourage mildew. Roses with dark green, glossy foliage are often fairly resistant. If your garden is very open, with little or no shade from trees and buildings, mildew may not be a serious problem. I had hardly any mildew last summer in my new garden, which is at present exposed to all four winds.

Rose mildew is mainly external or superficial, as the scientists say, i.e. it does not reach the inner tissues (black spot is deep seated). You can therefore destroy it by spraying or dusting. In practice, treatment is invariably preventive rather than curative. 'Tulisan' is the answer here and should be applied at ten-day intervals, as for black spot.

Although late May planting of outdoor tomatoes is often successful, there is always the risk of late spring frosts. The first week of June is usually quite safe. Should frost seem likely, cover the plants with pots or even newspaper.

Be sure you only put in first-quality tomato plants. Pot-grown specimens will fruit earlier than seedlings grown in boxes and are decidedly worth the small extra cost. Reject any plants which are tall and spindly and with very pale leaves. Short, stocky specimens with fairly dark green leaves are the only tomatoes worth planting. Water the soil thoroughly before planting but do not water again until the plants are really getting away. (If a drought occurs watering may be unavoidable.)

On light, dry soils a mulch of lawn mowings, hop manure, farmyard manure or peat is an excellent way of conserving moisture. This also helps to prevent splitting of the fruits.

Never plant in partial shade. Tomatoes want all the sun possible and detest a draughty position. A sunny fence or wall or a south border are ideal. Sun they must have, otherwise the fruits will be very slow to ripen out of doors. Last summer they were a comparative failure in many gardens, due to insufficient sunlight. Where however, cloches were used to cover the plants for a few weeks after planting out in late April and again in early autumn, plenty of sound, ripe fruits were obtained. In the north cloches are a tremendous help, as without them two trusses are often the maximum that can be allowed outside.

The Amateur and Atom are two new dwarf tomatoes which are about a fortnight earlier than other varieties. They need neither staking nor pinching out of side shoots, but it is essential to place a little straw round the base of the plants to keep the fruits off the soil. The fruits are naturally on the small side, but the flavour is first rate.

Low-growing rock plants like aubretia and arabis should be cut back hard after flowering, otherwise they tend to straggle. Sometimes aubretia is disappointing, refusing to bloom freely. It must have a sunny, well-drained position and an alkaline soil.

Concerning Colour

By T. Vickerstaff (Dyestuffs Division)

Colours are not always what they seem, in the sense that one and the same pigment can produce more than one colour. Here the Assistant Chief Colourist of Dyestuffs Division gives some ingenious examples of how colours deceive the eye and explains the reasons.

COLOUR is a sensation produced in an observer when he looks at a particular part of a scene or design. As such it is liable to be changed by the lighting, by the environment of the observer, and by the way in which the adjacent colours are arranged. The appearance of a colour may even depend on the health and mental state of the observer—whether he is feeling blue or in the pink.

To the textile designer all these aspects of colour are vitally important, since a particularly attractive colour—which he may wish to use as one part of a design—may be changed, dulled and degraded if surrounded by other colours of unsuitable character. This effect is quite different from the so-called colour harmonies and colour discords which arise when neighbouring colours produce a pleasant or unpleasant effect in the observer. In practice these changes of

colour are mainly of two types—"after-image effects" and "additive effects." Other names are sometimes used, but these particular ones have the merit that they indicate that colour changes have their origin in the structure of the eye and the way in which colour is perceived by the human observer.

It is generally supposed that the light-sensitive surface at the back of the eye, the retina, is composed of a mosaic of millions of nerve endings—the receptors—which are of three distinct types, sensitive to red, green and blue light respectively. When we look at any coloured object, the light which enters the eye stimulates these receptors, which then send a message to the brain. This message or sensation is interpreted as a colour.

For example, if we are looking at white paper all three types of receptors are equally stimulated, and

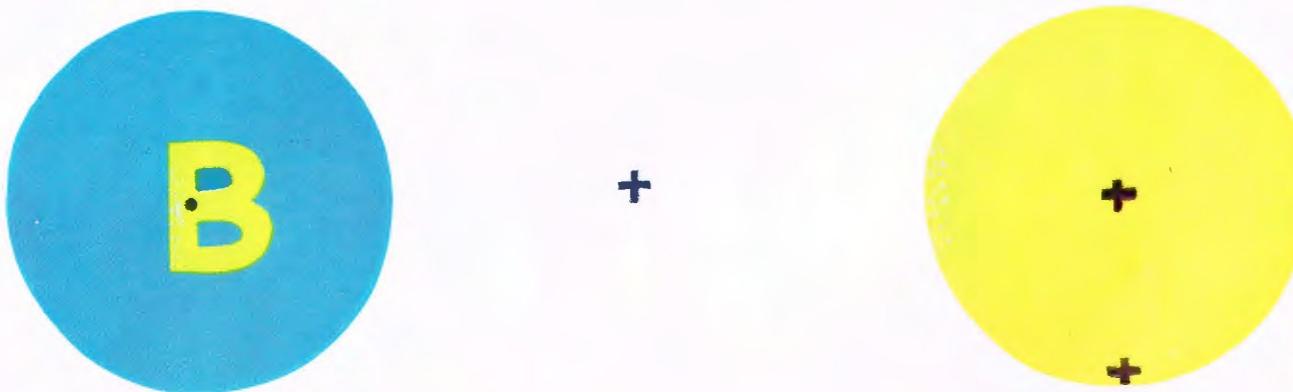


FIGURE 1. Stare fixedly without blinking at the black spot in the yellow B for about ten seconds. Then transfer your gaze straight to the black cross on white background. You will see a violet letter B in an orange-yellow circle, fading rapidly. For an explanation of this phenomenon, known as after-image effect, see text of article.



FIGURE 2. Here are four different shades of yellow; but in reality all four yellows are the same pigment. The explanation is again after-image effect. The nerves of the eye are affected by the colour of the surround and so produce a different response to the yellow in the middle.

the brain, receiving red, green and blue signals of equal intensity, correctly interprets this as white. A red setting sun stimulates the red receptors strongly but the blue and green receptors scarcely at all, whereas a pink face stimulates all receptors but the red to a greater degree than the others. This latter signal is interpreted by the brain as white plus extra red or pink.

The visual receptors are easily tired and quickly lose sensitivity. Thus if we stare fixedly without blinking at the spot in the centre of the letter B in Figure 1, the blue and green receptors in the circular area quickly become exhausted. If after ten seconds we transfer our gaze to the black cross on the white paper, an after-image consisting of a violet letter B and an orange-yellow background will be seen, fading rapidly. This is because the white paper, which normally produces equally intense red, green and blue sensations, produces in the tired area of the retina a stronger sensation from the fresh red receptors than from the blue and green.

These after-images are not noticed in everyday life because the eye is rarely held in a fixed position but is always moving and flickering about. Even when we gaze at a picture the eye is continually shifting from one point of interest to another, and perhaps in the ultimate analysis the beauty of form depends merely on its ability to induce the eye muscles to follow a smooth, pleasant and rhythmic path. This perpetual movement of the eye is nature's way of overcoming fatigue of the visual receptors, and the difficulty of gazing fixedly at Figure 1 for ten seconds will no doubt already have convinced the reader of this fact.

Now clearly such after-images must affect the perception of colour. This can be demonstrated by again gazing without blinking at the blue circle in Figure 1 and then transferring the gaze to the lower cross in the yellow circle. The after-image will be seen to fall partly across the yellow circle; and in the part where no colour after-image falls, the yellow appears dull and greenish in colour, whereas in the lower portion it shines out as a brilliant, intense

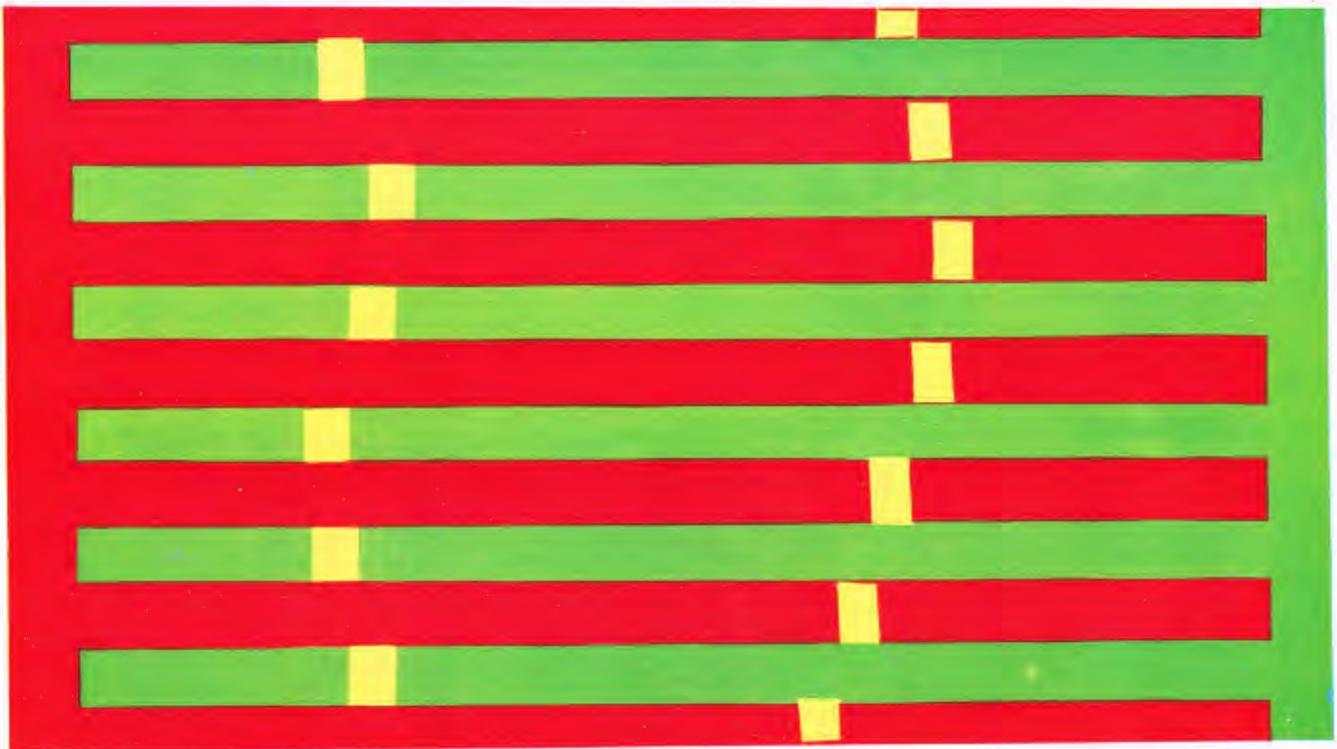


FIGURE 3. Another example of the same pigment producing a different colour. The two rows of yellow spots are printed with the same pigment, but the eye carries the colour from the stripe above into the yellow. The effect is increased by viewing from a distance and by moving the page rapidly up and down.

orange-yellow. In this area, of course, the colour of the after-image is reinforcing and intensifying the yellow colour of the print, but with other colours the effect can be to dull and degrade the printed colour.

The effect of after-images can be perceived in coloured designs where fairly large areas of one colour are adjacent to or surrounded by even larger areas of a contrasting colour. At the top of Figure 2 it is quite evident that the yellow rectangle surrounded by black looks much lighter in colour than when surrounded by white, although in fact both are identical in "colour."

In the latter case the visual receptors are tired by the white surround, and so as the eye moves on to the yellow area they are unable to produce such a marked response as they do when they have previously rested on black. In the lower half of Figure 2 the red surround produces a green after-image and vice versa, so that the yellow rectangle surrounded by red appears greener than that surrounded by green. In this type of effect, therefore, the colour of a given area tends to take on a colour complementary to that of the surround.

The second type of colour change is illustrated in

Figure 3. On a background of green and red stripes two rows of yellow spots are placed. In fact these spots are of the same colour (i.e. printed with the same pigment) but when viewed from a suitable distance appear quite different. It will be noted that the spots lying on the red stripes take on a greenish colour and those on the green stripes a red or orange cast. (In order to see this effect clearly it may be necessary to prop up the page against the wall and walk away for some distance. It will not be apparent when viewed closely.)

The same effect is even more strikingly demonstrated in the three designs of Figure 4, in which one blue and one red pigment are used together with black and white. In the two upper strips the blue and red in the centre sections appear much paler than on either side, while in the lower strip the colour of the blue lines depends markedly on whether they are outlined in black or white or in contact with the red background. Again the explanation is eye movements, but in this case the areas involved are smaller or the movements more rapid, so that different colours sweep across a particular part of the retina in rapid succession.

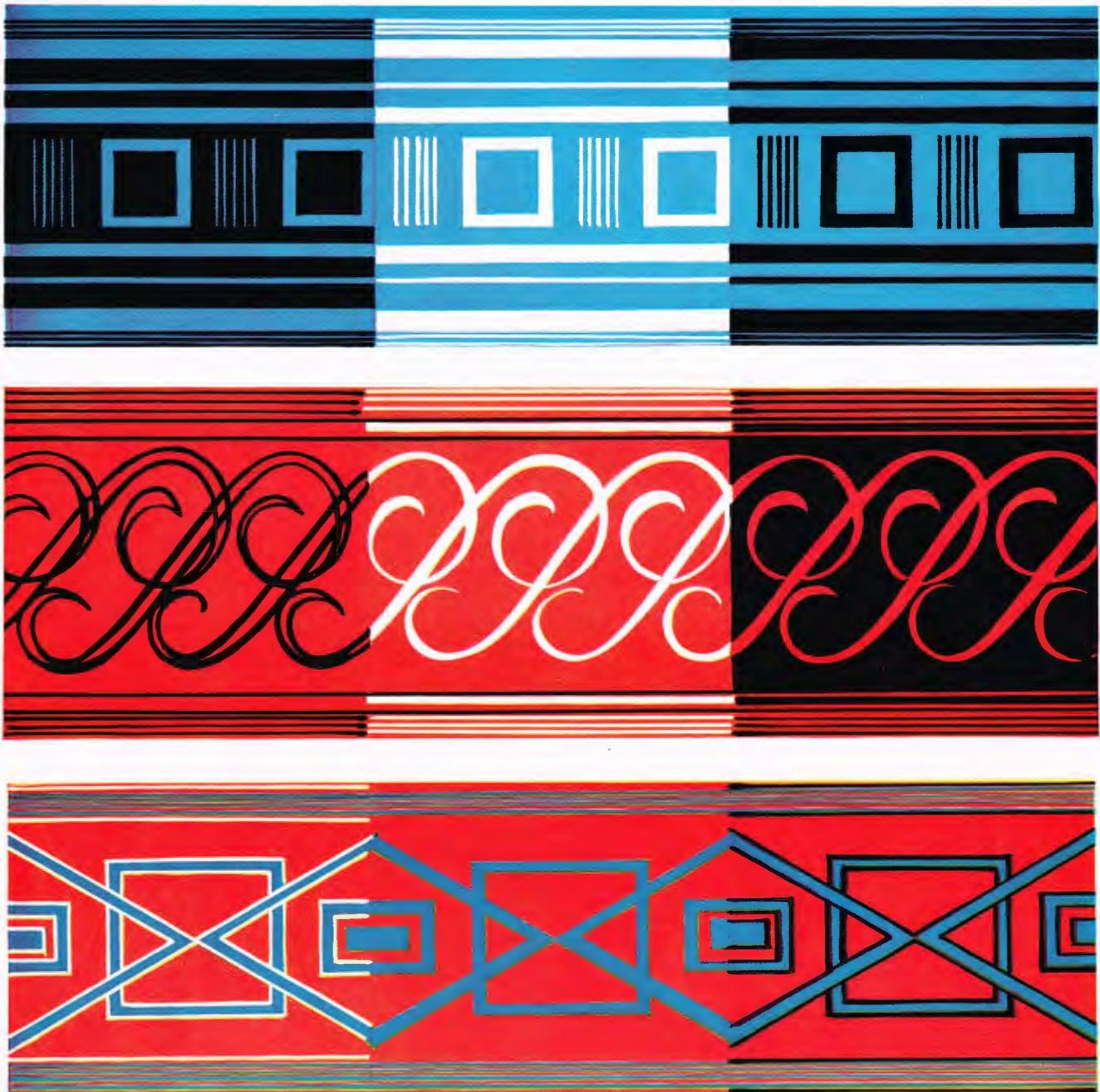


FIGURE 4. Here are several shades of red and blue. But in fact the reds and blues are the same pigment throughout and appear to change colour according to their position in the pattern.

In Figure 3, for example, the eye tends to sweep down the line of yellow spots across the stripes, and in so doing the colour of the stripe above the spot is carried into and added to the yellow from the spot itself. So green is added to the spots on the red lines and vice versa. This effect can be accentuated by shaking the paper to and fro at right angles to the stripes.

In intricate designs involving many colours, both after-image effects and additive effects may be present at the same time, and if ignored may lead the designer to disaster. On the other hand, if fully appreciated they may be used to enhance the beauty and brilliance of the colours. Truly it may be said that colour is not always what it seems, and certainly more than one colour may come out of one pot.

How I Write Music

By Frances Atkins (Jealott's Hill Research Station)

An intense emotional experience like composing music is not easy to explain to the layman. Miss Atkins succeeds brilliantly.

SEVERAL times I have been asked how I set about writing music. This is a very difficult question to answer. At the time my attention is concentrated on the music, leaving none to spare for watching myself. It is, however, possible to describe the process, partly by deduction, partly by memory. In the same way, when one catches a ball, it is possible afterwards to consider how one judged the speed and direction of the ball and made the appropriate muscular movements; at the time one's attention was concentrated on watching the ball.

I intend to describe how I set to work; I do not claim that it is the only way, or even the best way. What suits one person need not suit a different sort of person.

For vocal music the first step is obviously to choose the words. Sometimes when I am reading I think "How splendid! I must set that to music!"; at other times the words are imposed by the need to finish something begun.

When I have chosen the words I live with them: I analyse their grammar, I consider their meaning, I scan them, and I say them aloud over and over again. After a time, which varies from an hour to several years, the music comes. It may be just a tune, but more often both tune and bass are fairly clear with a vague middle part; or it is a tune started by one voice, then imitated by another, each voice in turn fading into vagueness when another starts.

It is absolutely essential to jot the music down at once, even if it means jumping out of a nice warm bed at half-past three of a frosty morning. Otherwise either most of the music will be forgotten and lost for ever, or the effort to remember the beginning will distract my attention so that the rest gets

stifled. In any case it is almost impossible to sleep, once the music has started to come, until it has finished.

I have never had music come to me so clearly that I could write it all down at once; there are always plenty of vague patches, and sometimes it is even uncertain whether the middle is held by one voice or two. This is where skill comes in. To work out what the vague parts might be and then choose one of the possibilities is rather like tackling a crossword puzzle; there one of the limiting factors is one's vocabulary; in music a comparable limitation is my knowledge of counterpoint and harmony.

When all the vague patches have been cleared up the music has to be critically examined in several ways. I sing over each part to make sure that the rhythm and meaning of the words are respected, that the parts do in fact lie within the range of the voices to which they are allotted, and that very high notes are not given vowels difficult to sing, such as EE. Then I play on the piano two parts at a time to see whether their movements with respect to each other follow the ordinary usages of counterpoint, a process similar to checking a report for grammatical errors such as a singular noun governing a plural verb. Often I find that when I alter a note to remedy one fault the amendment proves faulty in another respect. Sometimes a considerable time elapses before I can think of a way out; I may find that the best I can do is to choose the fault that seems least obnoxious.

The only easy way of examining the harmony is to hear the music tried out. There must be dissonances to avoid insipidity, but the harshness of any particular discord depends on how it is approached, how long it is held, whether it coincides with a rhythmic stress,

what follows it, and the average proportion of concords to discords throughout the work.

Instrumental music does not spring out of words, nor, for me, is there ever any association with any story, picture, or any other sort of programme. The most I can say is that my musical output does to some extent reflect my emotional level.

Sometimes I find myself singing or whistling a tune I do not recognise, wonder whether it is something I have heard or whether I have made it up, and jot it down in case. Occasionally a whole theme comes without any effort—tune and bass for particular instruments in a particular key.

At other times I am conscious of a vague feeling of uneasiness which I know from experience will last until I get something written. If it will not come of its own accord and I have no words waiting to be set, the only remedy is to force myself to write something, as an exercise. For this a period of at least two hours without interruption or noises from neighbours' radios is essential. This means in practice that I start as soon as everyone else has gone to bed. The first hour or so of effort seldom leads to anything, but after the brain has warmed up ideas begin to flow. Themes obtained thus laboriously are not necessarily either better or worse than those that come by inspiration.

The nature of a theme generally shows the sort of piece that will be written. No one who is at all musical could mistake a Viennese waltz for a funeral march; the lover of symphonies or chamber music soon finds himself able to distinguish just as easily between themes suitable for the different movements of such forms. The theme also shows the instrument: music suitable for a piano can usually be distinguished from that for a string quartet.

Once I know the sort of music I am trying to write I know what further themes I need. If, for example, I have the opening of the first movement of a piano sonata all I need is a contrasting theme, also for piano, and of which I have a good idea of the rhythm and

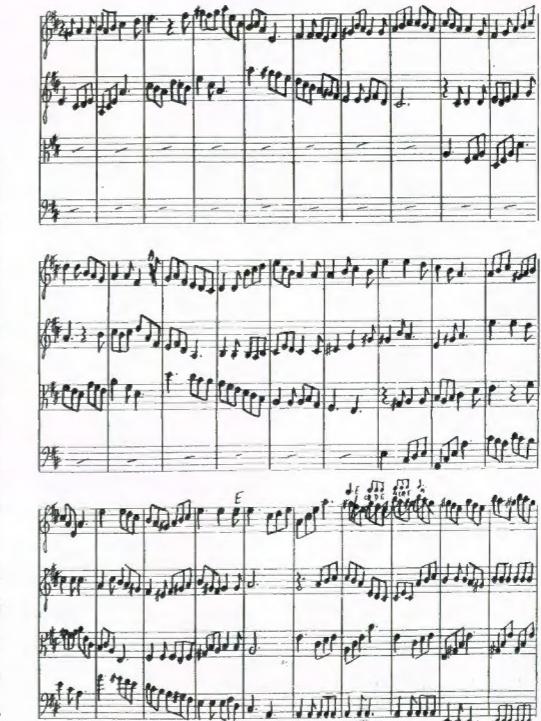
the key. I may find something suitable that I jotted down a few years before, or I may have to work in the same way as I did to obtain the first theme.

The next stage is to build up the themes into a movement. This is rather like writing a report. A series of tunes following each other at random is as disconcerting as a series of experimental results presented without order or explanation. The first movement of a symphony is like a comparison of alternative theories, such as the old debate as to whether light consisted of particles or waves. First the themes (or theories) are set out. In the middle part of the symphony the themes are "developed," a process analogous to the middle part of the report, in which various phenomena are examined in relation to each theory. In the symphony the themes are then restated and summed up in a coda; in the report the advantages and disadvantages of each theory are summarised, and the conclusion corresponds to the musical coda.

I generally get the whole of a movement jotted down roughly during two nights' work. Critical examination of it is similar to that of vocal music and may last nearly a week, after which I make a legible copy.

A flow of ideas for the remaining movements is often stimulated by reading, humming, or playing on the piano what I have already written. A three-movement work is usually completed in four or five weeks, though it may be revised from time to time during the next few months.

It is surprising that more people do not write music as a hobby; the only materials necessary are paper and a pencil, though access to a piano may be helpful. There are also great advantages in having a few lessons in musical theory, or at least one or two textbooks; but anyone who can read music well enough to pick out a tune on a piano or sing in a choir is capable of translating imagined sound into written music. I suspect that the real difficulty is the need for so much perseverance at the beginning, but the price in time and effort is small compared with the joy of creating.



A specimen page of the author's manuscript

I.C.I. NEWS

THE DUKE OF EDINBURGH VISITS FERNHURST

THE entire staff of the Fernhurst Research Station of Plant Protection Ltd. was on hand to welcome the Duke of Edinburgh when he arrived by helicopter on 10th May to make a tour of the estate and laboratories.

The helicopter landed in a field below Verdley Place, the administrative offices of the station, and as the Duke stepped from it he was received by Dr. Alexander Fleck, Chairman of I.C.I. Dr. Fleck then presented to the Duke Mr. E. M. Fraser, C.B.E., chairman of Plant Protection, who in turn presented Mr. A. J. Quig, a deputy chairman of I.C.I.; Mr. C. M. Carr, Joint Managing Director of Plant Protection; Mr. S. W. Cheveley, O.B.E., chairman of C.A.C.; Dr. E. Holmes, Technical Director of Plant Protection; Mr. T. A. Robertson, former chairman of Plant Protection; Mr. N. K. Smith, chairman of the Association of British Insecticide Manufacturers; Mr. S. P. Stotter, director of Fernhurst Research Station; and Mr. C. T. Ward, Joint Managing Director of Plant Protection.



Dr. E. Holmes explains a technical exhibit to the Duke. Behind them is Mr. E. M. Fraser and on the right are Mr. C. M. Carr, Dr. Alexander Fleck and Mr. T. A. Robertson.

Before beginning his tour the Duke was driven to Verdley Place, where he was shown a map of the estate. The party then walked from the house to the Technical Department, where a technical exhibit had been set up to illustrate the scope and purpose of the research carried out at Fernhurst. This included live exhibits, showing laboratory and glasshouse techniques. The Duke met the technical staff responsible for the individual experiments shown and took considerable interest in all that he saw.

At the farm demonstration plots the Duke was shown growing crops, some untreated and others treated with the Company's products, such as selective weedkillers, fertilizers and seed dressings.

From the demonstration plots the Duke was driven by Mr. Stotter in a Land Rover through the farm to the southernmost part of the 400-acre estate, where the commercial orchard of about 70 acres of apples, pears, plums, peaches and soft fruits was in full blossom. Here a spraying demonstration began with the arrival of an

Auster aircraft to show how aerial spraying is carried out. The usual methods in this country, including high-volume lance spraying, medium low-volume spraying with an air blast type of machine and low-volume mist blower spraying, were also demonstrated.

Driving past the tomatoes and carnations under glass and through the market garden, the Duke reached the Machinery Demonstration Centre. Here fruit sprayers, seed dressers, low-volume sprayers, and spraying and dusting machines for crops varying from grassland to coffee and cotton were on view. A number of machines were put through their paces, a helicopter with spraying attachment made a demonstration flight, and an



The Duke arrives in his helicopter

Auster aircraft as used in the orchard spraying demonstration was on the ground for inspection.

Throughout the whole tour the Duke showed the liveliest interest in the work being done at Fernhurst, and at one point he enquired into the extent of the liaison between Fernhurst and the I.C.I. Game Research Station at Fordingbridge. During tea he had a long discussion on a number of subjects connected with the work at Fernhurst and was obviously knowledgeable on farm practice.

Before he left Fernhurst the Duke accepted a working model of a low-volume sprayer for Prince Charles.



The effect of insecticide on black aphid is shown to the Duke by Miss P. M. Smith



A demonstration plot of untreated winter wheat is inspected by the royal visitor. Talking to him is Mr. D. Evans. Mr. S. P. Stotter is on the left, Mr. A. J. Quig and Dr. Fleck on the right.



A hop watering machine is demonstrated by Mr. F. Lane, head of the Fernhurst machinery department. A helicopter and an Auster aircraft also featured in the machinery demonstration.



THE QUEEN AT THE B.I.F.

When Her Majesty the Queen visited the British Industries Fair last month she stopped at the I.C.I. stand where 'Ardil' and 'Terylene' were featured. In this picture she is seen talking to Mr. P. C. Allen, I.C.I. Fibres Group Director. On the right are Sir Ernest Goodale, chairman of the B.I.F., and Mr. Alfred Weale, Nobel Division director responsible for 'Ardil.' The Duchess of Kent and Princess Alexandra also paid a visit to the stand.

DR. FLECK PLANTS "PREHISTORIC" TREE

A tree of a species thought to have been extinct since prehistoric times but recently rediscovered in Central China* was planted at Warren House, the I.C.I. Staff Training Centre, by Dr. Alexander Fleck on 29th April.

The tree-planting took place after the quarterly meeting of Division chairmen with the I.C.I. Board, which had been held at Warren House. The opportunity was taken to show those attending the meeting, and the Mayors of Malden and Coombe and Kingston-on-Thames, how the house had been adapted for its new rôle as a residential training centre.

If firm planting is any criterion, the tree should flourish. After Dr. Fleck had bedded it in, each of the Division chairmen contributed a spadeful of earth and a weighty stamp. When the ceremony was over the Chairman pre-

sented the stainless steel spade to the head gardener of Warren House, Mr. Spencer.

The first course to be held at the new Training Centre, Staff Course No. 46, started on 2nd May. Warren House is fully booked for the remainder of the year.



Dr. Fleck adds a new tree to the gardens of Warren House

* *Metasequoia glyptostroboides*, a deciduous conifer known only in fossil remains until 1947, when it was rediscovered in the Chinese province of Hupeh. Seeds were distributed here and in America, and quite a few specimens are flourishing in both countries. It is hardy, and may reach a height of 115 ft.

WORLD SAFETY CONGRESS

At the First World Congress on the Prevention of Occupational Accidents held in Rome Mr. H. R. Payne (head of I.C.I. Safety Department), Mr. B. Halfpenny (Safety Officer, General Chemicals Division), Mr. R. H. Hall (Wilton Works Safety Officer) and Mr. R. E. Tugman (Alkali Division Safety Officer) presented papers for the British delegation.



In the photograph above, taken on the Capitoline Hill, Rome, Mr. Payne and Mr. Tugman are on the left. On the right are Mr. R. H. Hall and Mr. G. F. Carter (I.C.I. Safety Department).

ALKALI DIVISION

Safety Officer Retires

Seventy-five of the Division's first-aiders crowded into the Sportsman Hotel, Northwich, on 22nd April to say farewell to Mr. Sam Williams, Winnington Works Safety Officer and Deputy Division Safety Officer, retiring after 48 years' service.

When someone as well known in the Division as Mr. Williams retires the occasion demands something unusual in the way of presentations. It transpired that Mr. Williams's first few weeks away from Winnington would be spent close to the kitchen sink, since Mrs. Williams was taking the opportunity to visit Canada for a few months to renew family ties.

The first-aiders rose to the occasion by investing the guest of honour with an apron (for cleanliness), an oven cloth (for prevention is better than cure), and, in resignation, a burn dressing (just in case).



Mr. Sam Williams (centre) being invested with an apron by Mr. George Gandy (left) and Mr. Frank Grocott

More formal presentations followed on behalf of Winnington Works Council, Winnington Works management, Division Safety Department, Division first-aiders, Winnington Hall Club, and, of course, the Company.

It was shortly before the second world war that Mr. Williams was transferred to the Safety Department at Winnington, and there is no doubt that he deserves much of the credit for the Division's excellent accident record since he joined the Department.

Common sense and the ability to introduce sobering good humour into most occasions are among the qualities that have made Mr. Williams popular throughout the Division.

BILLINGHAM DIVISION

A Medal from "Monty"



Mr. Benny Edwards (centre), a draughtsman in the Civil Design Section of the Division Chief Engineer's Department, realised one of his greatest ambitions on 16th April, when, as outside left in the Bishop Auckland team which beat Hendon 2-0 at Wembley, he was presented by Field Marshal Viscount Montgomery with an Amateur Cup winners' medal.

Mr. Edwards joined the Bishop Auckland club five years ago and was with them for three seasons before joining another club. He was away for only one season, however, and since rejoining last autumn has played regularly in the first team.

The match against Hendon was his second on the Wembley pitch, for he was in the Bishops' side which was beaten there by Pegasus in the 1951 Amateur Cup final.

Mr. Edwards has been in Chief Engineer's Department during the whole of his six years at Billingham.

Seven-a-side Win for Synthonia

After being held by other clubs for six seasons, the Watts Moses Trophy returned to Billingham when a team skippered by first-team forward George Brown won the annual seven-a-side tournament staged on the Northern League ground by the Synthonia Rugby Section.

Others in the team were Harry Tranter, Norman Carter, George Curtis, Richard Archibald, Arthur Mitchell and Bob Gittins, and there was no doubt that they fully deserved their success.

For speed, fitness and fine covering play they were outstanding, particularly in the semi-final and final, and they looked more like a tutored "sevens" side than any other.

To reach the final, in which they beat Durham City 16-0, they defeated Westoe 6-0, West Hartlepool 11-3 and Gateshead Fell 11-6, and the fact that the only points scored against them were from dropped goals gives some idea of how good they were in defence.

First-class organisation was again a feature of the tournament, which was watched by about 800 people from clubs throughout Durham, and all in all the event provided a fine climax to what has been a very good season for the Billingham club.

GENERAL CHEMICALS DIVISION

Engineer is Marine Artist

A painting in oils of the R.N.V.R. coastal minesweeper H.M.S. *Mersey* presented recently to an admiral by his staff was the work of Mr. Gordon Olver, of the Chief Engineer's drawing office.

Mr. Olver is a Lieutenant-Commander in the engineering branch of the permanent R.N.V.R. and also an accomplished artist. When Admiral A. K. Scott-Moncrieff, C.B., C.B.E., D.S.O., relinquished his post of Admiral Commanding Reserves, his staff commissioned Mr. Olver to paint a presentation picture of the *Mersey*, used to give sea training to officers and men of the R.N.V.R. Mersey Division.



Mr. G. Olver

The painting of the picture had a personal interest for Mr. Olver, for he is senior engineer officer of the ship. It is the third painting he has made of her: the other two hang in the wardroom of H.M.S. *Eaglet* and the home of *Mersey's* commanding officer.



H.M.S. *Mersey*, painted by Mr. Olver

Mr. Olver began his R.N.V.R. career in 1939, when he was finishing his apprenticeship at Castner-Kellner Works drawing office. A few weeks after passing his trade test as an Engine Room Artificer he was sent on the Dunkirk evacuation, and he served on the lower deck as an E.R.A. for the next 4½ years. Later he took a commission as a Sub-Lieutenant (E) and saw further sea service before serving as Base Engineer at Hamburg and Kristiansand. He ended the war as Divisional and Maintenance Engineer at Chatham.

First-aiders in the Limelight

Five of the Division's first-aiders and their trainer spent



General Chemicals Division first-aiders make an instructional film

three days with the I.C.I. Film Unit in London recently working under the harsh glare of floodlights.

They were making five films on first aid, which, with two films already completed, will form a series showing many of the conditions first-aiders may meet and the measures required for their treatment.

The films are being made under the supervision of Dr. A. Lloyd Potter, the Division Medical Officer, and are specifically designed for training purposes not only in the General Chemicals Division but throughout the Company.

METALS DIVISION

Director Retires

The end of March saw the retirement of Mr. J. M. Henderson (Metals Division Finance Director), who in the comparatively few years he spent at Division headquarters earned the respect and affection of many hundreds of employees.

Mr. Henderson's career with the Company, which lasted for 37 years, was divided into three distinct parts. He joined Nobel's Explosives Co. in 1918 and spent nine years at Ardeer before his transfer to the Costing Section of the Treasurer's Department at Head Office, becoming Cost Controller in 1944. He was appointed a delegate director of Steatite and Porcelain Products in 1943. The third stage began in 1945 with his appointment to the Metals Division board and to the delegate boards of Lightning Fasteners and Marston Excelsior. In 1947 he became a delegate director of Amal and in 1954 chairman of the Amal board.

Apart from his official duties, Mr. Henderson was known to a great number of people through his association with the Kynoch Social and Recreation Club, of which he was chairman for eight years. On his retirement he was made a life member and received many tributes to his wise and inspiring leadership.

Ladies First

For the first time in what is usually called living memory, two ladies' teams took part on Sunday, 3rd April, in an inter-Divisional hockey match. Metals Division (Kynoch Works) were host on this occasion, when they welcomed to Witton players and supporters from Dyestuffs Division (Blackley).

Over lunch before the match Mr. T. G. Austin (Metals Division Personnel Director) and Mr. H. Smith (Managing Director, Dyestuffs Division) warmly welcomed the innovation and expressed the hope that it would be the



The Dyestuffs and Metals ladies' hockey teams at Witton. With them are Mr. H. Smith (Managing Director, Dyestuffs Division), Miss L. Hirst (president of Kynoch ladies' hockey section), Miss M. Kenny (Women's Staff Officer, Dyestuffs Division) and Mr. T. G. Austin (Personnel Director, Metals Division).

forerunner of many occasions on which feminine charm would "steal the picture."

Even the weather seemed to realise the importance of the event, for although the afternoon was cloudy the rain held off until five minutes after the final whistle. The match itself did not, perhaps, measure up to championship standard. Kynoch's scored midway through the first half and held the lead until five minutes after the interval, when Dyestuffs replied with a rousing shot. Exchanges were very even for the remainder of the game, and although both teams had hearty encouragement from their supporters, no deciding goal was achieved. However, everyone enjoyed the game no less than the opportunity of meeting fellow enthusiasts from another Division.

Service of Seven

Among the recipients and guests at a long service awards presentation on 22nd April were seven men whose Company career is particularly interesting. Guests of honour were Mr. R. W. Prince (Kirkby) and Mr. T. H. Banbury (Marston Excelsior, Wolverhampton), who have each given the Company more than 50 years' service; Mr. Banbury is carrying on a family tradition, as his father also completed his half-century, following in his own father's footsteps.

Family service was also to the forefront when two brothers from Elliott Works, Messrs. A. T. and W. L. Major, received awards marking 40 years' service and three brothers from Allen Everitt Works, Messrs. Harry, George and Harold Stephens, stepped up to receive 20-year watches.

PAINTS DIVISION

Production Director Retires

Mr. P. A. E. Naylor, Division Production Director, retired on 30th April. He had been with I.C.I. and its predecessors since 1919, when he joined the family firm of Naylor Bros. Ltd.

Mr. Naylor was appointed assistant works manager at

Slough after Naylor Bros. was acquired by Nobel Chemical Finishes Ltd. in 1926. An interlude of two years selling 'Dulux' to the railway and bus companies was an experience which made him determined to make paints of which the manufacturers could be proud and which were competitive in every way.

This attitude provided a good basis for the training he received from business consultants when work study, as we now know it, was started in the early 1930's. The way of pioneers is never easy, and it says much for his persistence that the subject has grown to become a major part of I.C.I.'s activities today.

In 1940 Mr. Naylor was seconded to the Ministry of Supply and was sent to the South Wales filling factories of the Western Region. That he became a director on the Regional staff concerned with the three filling factories in that part of the world is further tribute to his qualities both as a technician and as a man.

Mr. Naylor returned to Slough in 1945 to be Production Manager and to make his contribution during the change-over from wartime to peacetime production. In 1950 he was appointed Production Director.

He had many interests outside his work. As a special constable he rose to be inspector, with two long service medals. He played a large part in the social activities of the Division, and was chairman of the Recreation Club as far back as 1926. His efforts for the British Legion led to his chairmanship of a local branch. Above all he is a keen fisherman, and part of his retirement will be spent near a fishing river in Wales.

PLASTICS DIVISION

Orchard Mill greets the Queen



When the Queen toured Lancashire in April she visited Darwen, where the Division has two factories. To greet her this special display was erected outside the entrance to the Orchard Mill 'Perspex' plant.

Designed by the Division Publicity Department, Welwyn, it was made of 'Perspex' from the Darwen plant.

Family Occasion

It cannot be often that a father and son share the distinction of receiving awards for 20 years' service in I.C.I. at the same time. In Plastics Division it was certainly a unique occasion when Mr. G. H. Clementson and his son Tom both stepped up to receive wrist watches from Mr. A. J. Quig, a deputy chairman of the Company.

The Clementson family came from Newcastle upon Tyne in 1934, and father and son joined Plastics Division at Welwyn the same year. Mr. Clementson senior works



Mr. G. H. Clementson and his son Tom

in the despatch section of Technical Service and Development Department. He is keenly interested in youth movements and runs a successful boys' football team.

Mr. Clementson junior is a member of Supply Department. He is a keen sportsman and a talented footballer who plays for the works football team in the Herts County League.

At the same ceremony the chairman of the Division, Mr. J. C. Swallow, received an award for 30 years' service. Forty-two other members of the Division received awards, two of them for 40 years' service.

SALT DIVISION

Cup Final Steward

A free view of the Cup Final is something many people would like; but as Mr. Jesse Green of Stoke Works can testify, it takes a lifetime of hard work in the cause of football before you are appointed a steward at Wembley for such an occasion.

Mr. Green holds an honoured place on the Worcestershire F.A., and because of this was chosen for duty at Wembley not only for the Cup Final but for the England v. Scotland game and the Amateur Cup Final.

His interest in football began in 1926, when he helped to run Droitwich Juniors, who won the Worcestershire Minor Cup and were league runners-up in their first



Mr. J. Green

season. After that he served the works team as secretary and chairman. He has been on the committee of the Bromsgrove Charity Cup, the oldest cup competition in Worcestershire, since 1936 and has been secretary for the last three years. He is also auditor of the Smedley-Crooke Cup.

The fact that he has never played in a football match detracts nothing from his ability as an administrator. Nor does the fact that he rarely plays darts diminish his ability as chairman of Droitwich H.S. Darts Club.

In summer Jesse Green is busier than ever. He is a member of the works bowls team and proud of a small trophy he once won. He is also chairman of the club. But his first love began at school. It was gardening. When he acquired a garden of his own he became a specialist in parsnips and other root crops—but particularly parsnips. With these succulent roots he has won show prizes at Shrewsbury, Birmingham and London. He has rarely exhibited a root under four feet long.

While his interest in sport is determined and fixed, he is no longer greatly interested in parsnips. He now prefers roses and has at least forty named varieties, and—believe it or not—grows them just to give to his friends. The successful sports administrator and the grower of lovely flowers seem far removed, but in Jesse Green they form an apt and highly successful combination.

WILTON WORKS

Prize Essay

Sister B. Todd, nursing sister in charge at Wilton Works, has won one of the five bursaries awarded to members of the Royal College of Nursing who have entered the open examination for the Industrial Nursing Certificate for this year.

Sister Todd wrote an essay of 500 words with diagrams on "My Ideal Health Centre," and received the congratulations of the adjudicating committee on her entry.

The details of the new medical centre at Wilton are at present on the drawing board. When the centre is built Sister Todd may find that some of her ideals have come true.



Sister B. Todd

A.E. AND C.I.

Ayrshire Bull for Africans

An unusual ceremony took place in March at the Somerset West factory of Cape Explosives Ltd. when the manager, Mr. F. V. Raleigh, presented a young pedigree Ayrshire bull to the African employees. It was received by the African welfare worker, Stanley, and the members of the African Works Council on behalf of all African employees at the factory.

Mr. Raleigh said that the bull was a gift from the Company, and it was given in the hope that it would contribute to the introduction of a better type of animal in the native reserve. He had much pleasure in handing the bull over to Stanley, whom the African workers had chosen to look after it. The works councillors, in reply, said that never before had such a wonderful thing been done.

Capex Golden Anchor, as the bull is called, was bred by Cape Explosives Works on their farm out of Paarde Vlei Molly, who was champion Ayrshire cow at Rosebank show



Mr. Raleigh presents a young bull to African workers at Somerset West

in 1942 and whose last calf was sold by the Company to a farmer in Natal for 135 guineas. Capex Golden Anchor was sired by Greenan Preference, which was imported by the Company from Scotland and was Ayrshire champion bull at the Goodwood show in 1954 and headed the group that won the gold medal for the best group of Ayrshires at the Rand show the same year. Golden Anchor himself has already given promise of successes to come by winning third prize in the Goodwood show in the under twelve months class.

The African workers have now asked that in future the bull be known as De Beers—the name by which Cape Explosives is known throughout the native reserve. (The company was founded by De Beers and later taken over by A.E. and C.I., which is jointly owned by De Beers and I.C.I.)

I.C.I. (EXPORT) DUBLIN

Irish Caps

The Dublin office of I.C.I. (Export) Ltd. is proud to have on its staff no fewer than four Irish international caps. They are D. S. Medcalf (three hockey caps), Miss Joan

Horne (thirteen hockey caps), J. K. D. Lacey (ten badminton caps) and R. I. Gill (six cricket caps).

Mr. Medcalf, a sales assistant in the Chemical Department with 10 years' service, is a keen cricketer as well as a hockey international.

Miss Horne comes of a well-known sporting family. Her father, Mr. Frank Horne, who is secretary of the



Dublin Office's four internationals: Mr. D. S. Medcalf, Miss J. Horne, Mr. J. K. Lacey and Mr. R. I. Gill

I.C.I. subsidiary Irish Metal Industries Ltd., represented Trinity College, Dublin, for five different games and was subsequently a formidable golfer. Her brother was Irish Junior Tennis Champion and plays in first-class rugger for the Bective Rangers. Miss Horne was centre-half in the successful Irish ladies hockey team which toured America last autumn (wearing, incidentally, green 'Terylene' tunics supplied by I.C.I.). She has been an invoice clerk in the Distribution Department for five years.

Mr. Lacey is still not in sight of giving up first-class badminton in spite of six years as a captain in the field gunners, during which time he never saw a shuttlecock. He is in charge of plastics sales and has been with the Company and its predecessors for 21 years, having joined the original Mouldrite Ltd. at Croydon.

In addition to being a Gentleman of Ireland, Mr. Gill is a Leinster selector. Apart from his cricketing interests, he used to play full back for a leading Dublin rugger club, Palmerston. He has been 17 years with the Company and is now the branch's distribution officer.

I.C.I. (INDIA)

Long Service Awards

During a recent visit to Bombay Mr. S. P. Chambers, a deputy chairman of I.C.I., attended a ceremony at which he presented long service awards to fourteen members of the Company.

In the picture Mr. Chambers is seen (centre) with the recipients of the awards. On the left are Mr. B. R. Goodfellow (head of India Dept., London), and Mr. N. D.



Harris (chairman of I.C.I. (India)); to the right of Mr. Chambers are Dr. C. E. Salkeld of I.C.I. (India), Mr. C. R. Prichard (I.C.I. Overseas Director) and Mr. E. W. Oakley (Joint Managing Director, I.C.I. (India)).

I.C.I. (SOUTH AFRICA)

Extension to Plant Opened

The 'Lightning' fastener assembly plant in Port Elizabeth, Cape Province, operated by I.C.I. (S.A.) Ltd., has been extended to include manufacture of chain, and the new venture was formally launched on 2nd February by Mrs. G. E. Hughes, wife of the managing director of I.C.I. (S.A.) Ltd. Among the guests were Mr. A. L.



Part of the extension of the 'Lightning' fastener assembly plant

Thomson, General Manager for South Africa of the Central Agency, Mr. R. A. Purchase, manager of the Port Elizabeth branch of I.C.I. (S.A.) Ltd., and a number of trade customers for 'Lightning' fasteners.

The picture shows three of the Silberman machines, with the assembly tables in the background.

All the girl workers are Cape Coloureds, and their output compares very well with the output of the workers at the parent factory at Witton.

Uncle John

By Brenda Ellison

Illustrated by Susan Einzig

We were allowed to walk round the beds of flowers, always remembering to praise the carnations. But much as I enjoyed the garden, it was the interior of the cottage which fascinated me.

On the left of the door as you entered was a long living room, in the centre of which stood a large table. There were, of course, many more pieces of heavy, old-fashioned furniture, but most important at 4 o'clock in the afternoon was the massive black fireplace complete with the usual oven and steel fender. A fire reminiscent of an open furnace belched forth, and as Uncle John's wife staggered in with a black monster of a kettle the flames caressed it hungrily as she relieved herself of the burden. On the side of the hob a large iron pan filled with water was also placed to heat. We children followed Uncle John and greeted Mrs. Brown—it never occurred to us to call her Aunt—calling out "Hallo, we've brought him home!" She would shepherd us into the sitting room to wait until her husband was ready to receive us.

We knew that he scrubbed himself in a zinc bath in the kitchen, rinsing the black dirt from his body. A peep round the living-room door told us he was standing in his clean trousers and drying his back and muscular arms in front of the open fire. The transformation scene made us laugh as his clean face complete with grey moustache and his ruffled hair would emerge from under the towel.

Soon he was warm and clean, and this was the signal for us to stand one on each side of the hungry man as an appetising meal was set before him on the table. Whatever Mrs. Brown prepared there was always a small portion for us, and we would eat in silence while she looked benignly on. For ten minutes or so after he had finished his meal he relaxed in his armchair and smoked his pipe while we told him some of the day's events. Eventually he would yawn and put his pipe on the high cornice above the fireplace.

This was the moment for which we waited. We would follow him into the sitting room while he

settled himself at a large black organ—not a harmonium, he impressed upon us. His work-worn hands would slide lovingly over the keys, always beginning and ending with a favourite hymn of Mrs. Brown's. The melodies he played in between seemed very beautiful to us. We sat on the floor and watched his feet pressing down the carpeted pedals as he blew the organ. Occasionally he permitted us to pull out one of the organ stops, and this made us very happy. I remember I invariably chose tremolo.

When he had finished he would touch the tops of our heads, carefully close the lid of the instrument and walk slowly out of the room. We accepted the fact that he was going to bed for a short rest until later in the evening and would bid Mrs. Brown "Thank you—goodbye" and run down the garden path.

We saw him every Sunday morning in church singing in the choir and marvelled that he looked so clean in his spotless white surplice. We never waited for him on Sundays, as he seemed to have no connection with the weekday friend. He usually wore a black suit and black bowler hat, and carried gloves and a rolled umbrella. Very proud and distinguished he looked as he walked slowly up the lane from church.

When we reminisce and talk of him, everything about Uncle John seems to have been black. The coal he hewed, the fireplace, the furniture, the old organ, his Sunday suit; even the small black marks made by pieces of coal falling on to his bald cranium and the backs of his hands.

Black also was the day mother told us quietly that Mr. Brown was very ill, and I remember saying incredulously "Do you mean Uncle John?" He died two days later from some sort of brain fever; I suppose it was meningitis, but we were too grieved to care what the medical name was. Uncle John had gone from our lives, and no more would we hear the hymns played on the old black organ.

He made a will, and in it he bequeathed the organ to the village school. I remember crying silently as our teacher explained the gift to us. She must have understood the reason for my grief and asked me to play the closing hymn for the day. I complied, moving my thin childish fingers over the keyboard and seeing in my mind's eye the gnarled heavy ones of the man who had loved to play it.

The organ is still there in the school and accompanies the children in their singing.

To Uncle John, who loved flowers, hymns and little children, it is a fitting memorial.



... always beginning and ending with a favourite hymn



"First Tack, Salcombe"

Photo by E. Young, A.R.P.S. (Dyestuffs Division)